Environmental Education and Earth Sciences

Georgia

4-H Outdoor Laboratories for School Field Study Trips

Situation:

Program Description:
The Georgia 4-H Environmental Education Program is a statewide educational program conducted at four of Georgia's 4-H Centers. The purpose of the program is to utilize the outdoors as a dynamic living laboratory for school field study trips to augment in-school curriculum.

Stakeholder Satisfaction:
The 4-H Environmental Education Program in Georgia is recognized as both a state and national education model. At least 12 other state Extension Services have utilized the Georgia program as a model. The curriculum is correlated with the Georgia State Department of Education quality core curriculum. Each class taught in the program is coded with the specific curriculum match per grade level. The program participants are also on academic tasks 8-10 hours a day and are considered at school, but in a different location. Therefore, they are not counted absent from school. The program operates during the school year, during the week.

Since its inception in 1979 at Rock Eagle 4-H Center, the program has enjoyed tremendous growth both in quality of programming and in participation. Today, it is the nation's largest resident environmental education program, annually serving more than 500 schools. The return rate for schools is approximately 94%. In addition, several Georgia schools as well as schools from 6 other southeastern states have participated in the program each of the 20 years the program has been in existence.

Accomplishments and Impacts:
In school year 2000-01, a pre/post test instrument was designed to determine the academic effectiveness of the program as it relates to content knowledge gained by the participants. These tests were given at each of the centers where the program operates. The questions were mostly multiple choice, with some essay questions. The pre-test was administered before the school participated in the program and the post test was administered by the teachers on their return to the school.

The statewide average gain of knowledge from program participation was between 40 and 45%. This represents greater knowledge retention after instruction than most traditional classroom instruction nationwide.

In addition, because the Environmental Education Program is hands-on and experiential in nature, it helps to shape the lives and career choices of the students participating in the program. Recently, a Cobb County middle school teacher reported that one of his students decided to become a marine biologist after participating in the program at the Tybee 4-H Center. "This student was previously a C and D student, and after the trip he brought his grades up to A's and B's. I've never seen any program change lives and have such a positive influence on student performance and life choices as the Environmental Education Program."

Resource Commitment:
The Environmental Education Program is a self-supporting program, generating revenue from user fees. With the advent and development of the statewide program, more than $2 million has been contributed to the program through grants and donations from a wide variety of donors, from individuals to corporations and foundations. A $200,000 challenge grant was awarded for the development of the Natural History Museum at Rock Eagle 4-H Center. As a result, the program continues to expand educational resources provided to visiting schools, including plans to construct an Ecology/Wildlife Building and new pond labs at Rock Eagle and to develop a Marine Museum near the Jekyll Island 4-H Center (Tidelands Nature Center — now open to the public and school groups).

Collaborators:
Collaborations with other agencies include but are not limited to the Georgia State Department of Education, public and private schools throughout Georgia and the Southeast, Partners For Excellence in Education, many units of the University of Georgia, the Georgia Department of Natural Resources, and the Jekyll Island Authority.

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Other Base Program Areas This Program Applies to:
Natural Resources & Environmental Management, Leadership & Volunteer Development, Community Resources & Economic Development

Pennsylvania

4-H Community Service Projects Benefit the Environment

Situation:
Due to the recent increase of urban sprawl on coastal wetlands, traditional nesting sites of the Eastern diamondback terrapin have been severely threatened. Perhaps a few terrapins will be saved, however, as a result of the efforts of the Ambler 4-H Reptile Club, located in Montgomery County, PA. Urban sprawl is also impacting other natural populations, and the club has worked to educate the community about these populations as well.

After visiting the New Jersey Wetlands Institute, the Ambler 4-H Club members became passionate about saving the terrapins. Terrapins were laying their eggs on the highway, only to have them crushed by cars on their way to the Jersey shore. Club members began the task of researching how to save the terrapins. At the Institute they handled, fed, and weighed the terrapins, cleaned their tanks, and replenished the brackish water. They also picked up squashed pregnant females from the road, harvested the viable eggs, and placed them into incubators. They handled newly-hatched baby terrapins and released adult female terrapins into the salt marsh as part of their "raise and release" program. Their research also led them to the Philadelphia Zoo, as well as to the small urban Elmwood Park Zoo in Norristown. Their efforts resulted in a permanent zoo exhibit, aptly named "Turtle Turf."

Program Description:
The 4-H Club members' age range is 8-18. The group is led by a professional biologist, an avid environmentalist and one of six 4-H leaders from across the country to be named a "National Wildlife 4-H Volunteer of the Year." Parents of club members also provide much volunteer time.

The Elmwood Park Zoo project began with 4-H members researching pond design, devising a fencing system, and exploring ideal habitat conditions for a healthy turtle population. Members as well as their parents spent countless hours clearing debris, digging a perimeter trench, hauling and installing eight tons of crushed stone, digging and lining a pond, and washing and hauling rocks for landscaping. Club members also constructed an otter raft, two turtle rafts, and a turtle nesting box before transferring several donated turtles to the exhibit. The exhibit was installed in an unused portion of the aviary exhibit that the Ambler Club had also helped to create. In addition, the club members helped develop Elmwood Park's butterfly exhibits. The club was asked to help construct a children's exhibit called "How Far Can You Jump?" as part of the zoo's new "Conservation Kingdom." The animals in this project are huge painted plywood models, ranging in size from a salmon to a jaguar, which are color-coded to specific lengths on an accompanying 24-foot ruler. The idea is for visitors to take a flying leap and measure the distance from start to finish. Ambler 4-H Club members have also worked on other environmental projects, including building birdhouses and setting them up at various locations, setting up a snake and lizard habitat at Robbins Park Nature Center in Ambler, and making meals for the homeless.

Stakeholder Satisfaction:
The 4-H Agent has acted as the facilitator and resource person for the Ambler 4-H Club. Assistance with grant writing was offered and the group received financial support as a result of those grant requests. Club members and volunteers deserve all the credit for their accomplishments. Club member efforts have expanded programming opportunities at several sites across Montgomery County. Programming has impacted club members individually as they learn about the sensitivity of their environment and the efforts needed to preserve their natural heritage.

Accomplishments and Impacts:
Club volunteers hope to "develop in 4-H members a sense of community service to the environment, not only in the local community but also in neighboring states or parts of the country so that they continue to enjoy the great world we live in and keep it as pristine as possible for our generation and for generations to come." In the past 3 years the group's efforts have had a large impact on the members themselves, as they have given their time unselfishly to the community service projects and have "learned by doing."

The impact on the environment has been obvious. Rescuing terrapins and terrapin eggs from the road has resulted in increased numbers of these animals and increased terrapin births. More habitats at Robbins Park and at the Norristown Zoo are available to the public. The community has also seen the impact that a group of young people and families have on the environment, as there are signs at the exhibits indicating the cooperative effort between the Ambler 4-H Club and local businesses. The club leader's hands-on approach in working with the 4-H Reptile Club has taught youth all about reptiles and care of their environment to help prevent reptiles from becoming endangered. In addition, the number of members in the 4-H reptile club has more than doubled since the club began three years ago. Public interest in the reptile exhibits and demonstrations at the Montgomery County 4-H Fair have given the 4-H program a reputation in the community as having "unusual" programs for youth.

Resource Commitment/External Collaborators:
The 4-H club's ongoing relationship with Elmwood Park Zoo is "a natural." A local business' "Dollars for Doers" program has made many of the club's projects possible. The business has donated more than $2,000 for the club to complete the projects.

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Other Base Program Areas This Program Applies to:
Natural Resources & Environmental Management, Leadership & Volunteer Development

Kansas

Earth Awareness Researchers for Tomorrow's Habitat (E.A.R.T.H.)

Situation:
Many Sedgwick County schools do not have the resources, expertise, or time to plan effective, comprehensive, research-based environmental education programs. Because of this, local students have no opportunity to learn the skills they need to become aware and active in environmental issues. In 1999-2000 a coalition of 14 community organizations and businesses inaugurated a new hands-on middle school environmental education program called Earth Awareness Researchers for Tomorrow's Habitat (E.A.R.T.H.).

Program Description:
The E.A.R.T.H. program is a year-long environmental education program that served 1,000 middle school students from three school districts in 2000-01. Each fall, award-winning curriculum (2000 NAE4-HA Communicator Award, 2000 Kansas Department of Health and Environment Pollution Prevention Award), curriculum supplies, and training are provided to 12 area middle school teachers. The curriculum is built around four major themes: land, water, air, and living resources, and encourages students to increase their capacity for critical thinking, problem solving, and decision making.

In the spring, E.A.R.T.H. participants attend an off-site interactive student workshop sponsored by the E.A.R.T.H. Steering Committee, with sessions taught by local business and community organization representatives. At the workshop, children apply the lessons they have learned in the classroom and use their critical thinking skills to learn more about, or become active participants in, some local environmental issues.

During the two years that E.A.R.T.H. has been in existence, all of the participating students have been from urban or suburban schools located in Sedgwick County, Kansas. School demographics indicate that 55% of participants are minority students, and 41% are members of families who live at or below the federal poverty-level guidelines.

Stakeholder Satisfaction:
During the 2000-01 school year, the E.A.R.T.H. Steering Committee members, program coordinator, participating teachers, and workshop volunteers and presenters committed 5 FTEs. The teachers and their students complete at least six lessons from the E.A.R.T.H. curriculum book during the school year, and attended the day-long E.A.R.T.H. workshop in the spring.

Accomplishments and Impacts:
In 2000-01, students and teachers completed written, oral, and observational evaluations of the in-class E.A.R.T.H. curriculum lessons and the spring workshop activities. About 85% of students said that they learned something new at the spring event, and 75% said that they had fun learning. According to teachers, the students had a chance to experience things in the E.A.R.T.H.

that they would never have learned otherwise. Some students were so excited about E.A.R.T.H. that they wrote about it in their English essays at school and taught E.A.R.T.H. activities to their brothers and sisters at home.

Resource Commitment:
2000-01 Cash Grantors:
K-CARE $ 5,000
KDHE $26,700
2000-01 In-Kind Supporters:
Food suppliers (grocery stores, restaurants, soft-drink bottlers)
Event location (Salvation Army Camp)
Volunteer and workshop presenter time and supplies

Collaborators:
2001 E.A.R.T.H. Steering Committee, Sedgwick County Office, K- State Research and Extension, Bothwell Environmental Services, Wichita State University, Great Plains Earth Institute, Sedgwick County Health Department, Member-at-Large, City of Wichita, KS, KSU Pollution Prevention Institute, Unified School District 260; Derby, KS, Great Plains Nature Center, Unified School District 259; Hamilton 6th Grade Center, Unified School District 259; Wichita-Sedgwick County Planning Department, Wichita-Sedgwick County Environmental Health.

Contact Persons:
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Other Base Program Areas This Program Applies to:
Natural Resources & Environmental Management

Massachusetts

Sportfishing

Situation:
Massachusetts is a coastal state, and aquatic ecology and stewardship is key to the future of our state. The introduction to fishing and the fundamentals of aquatic ecology at an early age are the best means available to instill a sense of stewardship for our aquatic resources. The nationally recognized 4-H Sportfishing program will be the tool for achieving these principles and assisting diverse youth and adult in developing more effective leadership, critical thinking, and ethical decision making skills.

Program Description:
The initial audience included six 4-H Youth and Family Extension Educators, two 4-H camp staff and two 4-H volunteers who served as the state core sportfishing team. All of the core team members participated in the National 4-H Sportfishing Training, with the intent of both hosting and then bringing the program to Massachusetts.

Once back, the core team planned and implemented 22 trainings and workshops across the Commonwealth, with an emphasis on recruiting rural, suburban, and urban youth and youth service providers as participants. A specific part of the plan also included training the staff from our five 4-H camps so that the program could be replicated with campers. Participants attended in-depth workshops on angling skills, tackle crafting, natural resource ethics, and aquatic ecology.

Stakeholder Satisfaction:
Six FTE 4-H Extension educators served as the core team and trainers for the Sportfishing Program. The program was replicated for campers throughout our five camps during the Year 2000 camping season. Throughout the 4-H year, angling, aquatic ecology, and tackle crafting workshops were offered at various 4-H events such as "back-to-school," mini-conferences, and winter forums. To support the trainings and programs, eight completed sportfishing kits were provided: one to each of the five 4-H camps, two to our urban sites (Boston and Worcester), and one to our western Massachusetts towns.

Accomplishments and Impacts:
The Sportfishing Core Team offered 22 trainings and workshops across the state reaching 221 diverse youth, 41 4-H volunteers, and 205 youth service providers and other adult leaders. Much of the funding for the program, almost $13,000, was provided by the Massachusetts 4-H Foundation, Inc.

The greatest achievement was shown at the camps. Almost 2,700 campers (with duplications) participated in the wildlife and fisheries programs offered at camp during the 2000 camping season, compared to 300 campers in 1999. More than 1,500 campers participated in aquatic ecology workshops during 2000, compared to 260 in 1999. A summative evaluation of campers during one week of camp at our five camps indicated that 41% of the 99 campers increased their skill level in sportfishing and aquatic ecology by "very much"; 29% of 247 campers increased their skill level in aquatic ecology by "very much"; 34% of 175 campers indicated an interest in continuing to develop their skills in sportfishing, while 36% of 239 campers indicated an interest in expanding their skills in aquatic ecology. Thirty-eight percent of 298 campers within a given week indicated that their appreciation for the natural environment had increased by "very much" since attending camp.

Resource Commitment:
Two of the 4-H Extension Educators (Renee Podolec and Mary Almon) submitted grant proposals to the Massachusetts 4-H Foundation, Inc. The Foundation supported the program in

the amount of $13,000, which covered the costs of the national training for staff and volunteers and the purchase of sportfishing kits and other supplies. The two camp staff, Lauren Ebbecke and Michael Campbell, were supported through their respective camps, Camp Howe and 4-H Farley. The core team 4-H volunteers included: Jim Spinale, Janis Moore, and Fred Jennings. Other 4-H staff core team members included: Kim Anderson, Rita Renee Toll-Dubois, Sarah Spalding, and Sarah Wanczyk.

Collaborators:
University of Massachusetts 4-H Youth and Family Development Program; Massachusetts 4-H Foundation, Inc; National 4-H Sportfishing Committee; and the 4-H Farley Outdoor Education Center.

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Other Base Program Areas This Program Applies to:
Natural Resources & Environmental Management, Leadership & Volunteer Development, Agriculture

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Indiana

4-H in the Classroom

Situation:
The goal of the 4-H in the Classroom project is to adapt and deliver grade-appropriate 4-H curricula that emphasize hands-on learning. Teachers have expressed continued demand for the 4-H in the Classroom program because it is easily incorporated into their classroom lesson plans and supplements traditional book learning with interactive approaches.

Program Description:
In response to the teachers' needs, the 4-H in the Classroom program developed in Marion County includes a set of seven packaged curriculum lessons. Teachers can select one, all, or any combination of the lessons. The lessons include:

- Why Leaves Change Color
- What's Bugging You?
- Wonderful World of Weather
- Great 4-H Garden Adventure
- Great Ag-Venture
- Celebrate Arbor Day!
- Ride the Water Cycle

Stakeholder Satisfaction:
Teachers have expressed continued demand for the 4-H in the Classroom program because it is easily incorporated into their classroom lesson plans and supplements traditional book learning with interactive approaches.

This is the fourth year for the 3rd and 4th grade component of 4-H in the Classroom and the second year for the 1st and 2nd grade component.

Accomplishments and Impacts:
A total of 11,052 students in 474 classrooms participated in 4-H in the Classroom during the 2000-01 academic year. This is a 19 percent increase from 1999-2000 and a 262 percent increase from 1998-99. Students from all 11 Marion County public school corporations, in addition to private, parochial, and home schools, utilized the 4-H in the Classroom curriculum.

Evaluation forms for each lesson were provided. When the teachers returned the evaluations, they received a "Certificate of Participation" for the classroom and their students received "4-H in the Classroom" ribbons. Of the teachers returning evaluations, more than 90 percent of the teachers rated 4-H in the Classroom as "good" or "excellent." The teachers reported that the students gained life skill learning in the areas of thinking, caring, relating, being, managing, working, and living. Sharon Lipford, a Skiles Test 2nd grade teacher, described the activities as "great, well thought out, and easy to implement". Heather Haskitt, a 1st grade teacher at IPS #21, reported, "My students have enjoyed all the lessons. I love to teach science, and these lessons made it even more enjoyable."

Resource Commitment:
County appropriation from Marion County Government.

Collaborators:
None.

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Arkansas

Millwood Water Carnival

Situation:
Current water quality issues require that students understand the circumstances leading to undesirable water conditions in area lakes, rivers and streams in our area. A program was introduced in 1993 to teach fifth and sixth grade students about water quality in our area, how the water quality in other areas affects us, and how our practices affect others. The program was titled "The Water's Edge", and has been taught for the last eight years in elementary schools in Hempstead County, Howard, Little River and Sevier Counties. After the three day classroom program, the students are invited to the Millwood Water Carnival as a grand finale to the program. The majority of the students live in rural areas and get their drinking water from wells. Many of those on a city water supply are using water from Millwood Lake or a river in the watershed. To show the students how important water is to people, plants and animals, we invite them to the Millwood Water Carnival where they learn first hand through different sessions in an outdoor atmosphere.

Program Description:
The Millwood Water Carnival is conducted each year in the spring, after all schools have finished the three day "Water's Edge" program. Program assistants from the four counties plan the program each year. Schools are contacted, dates set and instructors are contacted. Most of the instructors who assisted eight years ago are still assisting today. Several agencies are involved in teaching about water quality through games and activities that the students enjoy. Students are assigned to eight sessions and rotate from session to session at twenty minute intervals. The day's activities consist of programs involving alligators, fish and wildlife, forestry, soils, water safety, recycling, pollution, and many others. The impact on water quality is discussed at each session to reemphasize what is learned in the "Water's Edge" program. Teachers and instructors are given evaluation forms to evaluate each session and the program as a whole. Teachers are given a resource sheet with all agencies and instructors listed for later use.

Stakeholder Satisfaction:
We are very proud of the program. Schools hardly ever turn us down when invited to attend. Conflict dates are almost all eliminated by scheduling the program for the same week and day every year. The carnival is very organized, and all sessions are age appropriate for the students. Games and activities keep the students' interest and are enjoyed by all.

Accomplishments and Impacts:
Teachers have told of seeing students' "light bulbs coming on" when things are discussed in the classroom at a later time. They will say "that's what we learned about in the water program." This overlaps with other things that are taught in science class, and helps them understand things better. Students actually care about their environment. You can see it in their eyes and hear it in their questions while teaching the "Water's Edge" and the carnival sessions. We get great

evaluations from the instructors, as well as the teachers who attend.

Resource Commitment:
Collaborators cover their individual expenses.

Collaborators:
Natural Resources Conservation Service, U of A Cooperative Extension Service, Millwood State Park, Corps of Engineers, Arkansas Game and Fish Commission, Arkansas Forestry Commission, Arkansas 4-H'ers, Independent trappers and individuals with special interests.

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Other base program areas this program applies to:
Natural Resources Environmental Management

Arkansas

4-H Responsible Environmental Stewardship Quest (4-H RES-Q)

Situation:
Many youth in urban and in rural areas do not have the opportunity to experience the natural world and to develop an appreciation for their world and respect for living things. The 4-H RES-Q program was developed to give youth an opportunity to heighten their awareness of natural systems and their place within them and to apply concepts to real life situations.

Program Description:
The 4-H Responsible Environmental Stewardship Quest (4-H RES-Q) is a tailor made environmental education field trip available to schools and youth organizations throughout the state. Teachers and leaders can choose from a one-day or two-day/ one-night trip and choose from a selection of eighteen different hands-on classes. Program curriculum is pulled from a variety of different resources such as Project Learning Tree (PLT) , Project WILD, and Project WET, and Arkansas WET. This curriculum format meet the science needs for teachers and can be expanded upon in the traditional classroom.

Stakeholder Satisfaction:
Due to the unique diversity of Arkansas' youth, students come away with a potpourri of educational awareness. Each year over 500 students from the northeast Arkansas farming area are exposed to a forested mountain landscape. These students learn about forestry, geology and a unique woodland habitat. While they participate in classes, students are introduced to life skills

such as communication, decision making, working together, understanding self, relationships and learning. These life skills along with hands-on curriculum are expanded upon back at their school and incorporated into the teachers everyday lesson plans.

Accomplishments and Impacts:
Each year over 7,000 students participate in the 4-H RES-Q program. By educating youth today, as adults they are able to make informed decisions leading to a better life and environment for future generations.

Resource Commitment & Collaborators:
4-H RES-Q is sponsored by the University of Arkansas Cooperative Extension Service and the Arkansas 4-H Foundation with funding coming from a variety of state, federal, and private organizations. Major contributors include the Arkansas Game and Fish Commission, the Arkansas Department of Environmental Quality, the USDA Forest Service just to name a few. Each year over $60,000 are acquired through grant sources from the Environmental Protection Agency, the Arkansas Big Buck Classic, the Arkansas Game and Fish Commission, the USDA Ouachita National Forest, Nucor Steel and Nucor Yamato Steel of Arkansas, and numerous private organizations.

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Other base program areas this program applies to:
Natural Resources Environmental Management, Agriculture, Leadership & Volunteer Development

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California

On the Wild Side

Situation:
At a time when test scores are scrutinized, science falls second to reading and math in the school day, especially in low-income communities where test scores often lag. Children who receive formal environmental education are likely to be from middle-income backgrounds where the economic and cultural barriers are negligible. While science education is being squeezed from elementary school curriculum, after-school programs with an academic focus are springing forth across the landscape, especially in economically disadvantaged neighborhoods. These programs are hungry for activities that promote learning in a non-formal context and create an ideal setting for teenage participation.

Program Description:

The benefits and importance of environmental education for young people today cannot be overstated, but several forces inhibit youth from economically disadvantaged backgrounds from experiencing the learning and wonder outdoor experiences provide. The 4-H Youth Development program joined forces with the Sacramento START after school program and the Sierra Club to create On the Wild Side, a program to allow children from economically disadvantaged neighborhoods to learn about the environment and experience the outdoors at an overnight camping experience. Eighty-one percent of Sacramento START students are ethnic and racial minorities, most of whom live in low-income families were education levels are minimal and often English is not the primary language. Key to the project's success were the teens who served as program planners, teachers, and evaluators for the weekend events.

The program contained two components: weekly hands-on environmental education lessons during the after school program, and an overnight camping experience. A UC Davis graduate student intern delivered 12 weeks of activities Sacramento START sites. Twenty-five teenagers were trained in Project WILD and Project Learning Tree, nationally tested environmental education curricula. The teen teachers then planned and delivered overnight outdoor living experiences for the START students, drawing upon the activities from the curricula.

Stakeholder Satisfaction:
Enthusiastic responses from Sacramento START personnel, teen teachers, young participants and program partners confirmed the program's first-year success in 2000. Evaluations from youth participants were extremely positive, 75% of teens returned and brought friends to serve the program in 2001, and funding increased for program expansion. The program has served over 200 4th, 5th and 6th grade children and 30 teenagers. A team of volunteers oversees On the Wild Side with guidance from the 4-H Youth Development Advisor.

Accomplishments and Impacts:
Expanding Knowledge of the Natural World: A pre-test was given to participants the week prior to their attending camp to assess their knowledge in the environmental concepts to be introduced at the weekend, followed by a post-test at the end of camp. Additional data were collected through journals the children kept and a closing written evaluation.

The data indicate that participants increased their vocabulary (herbivore, predator), grew in their knowledge of habitat and ecosystems, and became familiar with plants and animals of the Sierra foothills. Concepts like ecosystem and population are complex, but the young participants showed evidence of understanding such systems. One boy wrote: "I saw a deer, a girl (female) because it did not have antlers. And it was not a baby because it did not have spots. Again I saw one run by. I learned that the more deer, the less habitat. But the more (mountain) lions, the less deer but more habitat for the next year." His conclusions, stimulated by observations and a teen-led activity, illustrate his making sense of ecological relationships.

Developing an Enthusiasm for Nature and the Outdoors: For many participants, On the Wild Side opened eyes and minds to a world never before experienced. It was the first time many had slept

outside, paddled a canoe, or seen a deer in its natural habitat. A variety of feelings accompanied these experiences: excitement, wonder, fear, uncertainty, accomplishment. One child described being blindfolded on the trust walk as scary; others were hesitant to try the canoe. In the end, the children felt safe enough to take the risks and emerged more confident as a result of the experience. Youth experienced their surroundings in new ways. As one girl wrote, "I enjoyed (the) Sound Around (activity) because you could hear different things like birds, bugs and other animals. My favorite place to listen was at the lake. The reason that I liked the lake is because most of the strange sounds were at the lake and the water sound was so beautiful…"

Impact on Teen Teachers: Teens were surveyed prior to beginning the planning process and observed throughout the weekend events. Teens proved effective teachers and were observed not only giving activity directions, but asking probing questions to help children process what they were experiencing. When asked to comment on their feelings after the program, teens said they were tired, ready to go home, but were excited about the event and had fun while doing it.

Resource Commitment:
On the Wild Side was funded by the Sierra Club Youth in Wilderness Project ($20,800 over two years), the California Communities Program ($8,000 over two years). Sacramento START contributed adult staffing for the outdoor living experiences.

Collaborators:
University of California Cooperative Extension (program coordination and evaluation); Sacramento START (teen teachers, students to receive program, adult supervision); the Department of Fish and Game (Project Wild curriculum); Camp Fire Boys and Girls (program volunteers and teen teachers); California Communities Project (graduate student intern) and Sierra Club (funding for wilderness events).

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Other Base Programs:
Leadership & Volunteer Development

National 4-H Council

Going Places, Making Choices

Program Description:
National 4-H Council has designed an innovative curriculum that focuses on raising the awareness of high school age youth about transportation and personal mobility choices now and in the future. Going Places, Making Choices challenges youth to understand the interdependency

between economic, environmental, social, and political concerns through five units that cover: the history of transportation, natural resources and energy use, global climate change, land use, and personal choices and community action.

The curriculum was developed in 1997 by a national design team comprised of 4-H volunteer leaders, 4-H and non-4-H high school age youth, 4-H Youth Development/Extension Agents, scientists, educators, and representatives of the U.S. Environmental Protection Agency (EPA), Natural Resources Defense Council, North American Association for Environmental Education, Stanford University, Michigan State University, and the National Science Teachers Association. After extensive pilot testing and revision, the final version was launched for national distribution at a National Town Meeting in Detroit, Michigan in May of 1999. The curriculum is also available on the web at http://www.4HGPMC.com.

Program Impact and Accomplishments:
Based on feedback received from educators and youth during the evaluation phase of the second pilot test, Going Places, Making Choices increased youth participant knowledge of environmental issues and related transportation choices.

· 75% of youth participants who completed the evaluation form after using the curriculum described it as educational.

· On the average, 33% of youth participants indicated learning about or changing behaviors regarding alternate forms of transportation and global warming/air pollution.

· Going Places, Making Choices received the 2000 Clean Air Excellence Award sponsored by the Clean Air Act Advisory Committee, which supports the EPA in its efforts to implement the Clean Air Act Amendments of 1990. The award recognizes and honors outstanding, innovative efforts that help to make progress in achieving cleaner air.

· Feedback from workshops, open-ended surveys, and interviews have indicated that Going Places, Making Choices has been successful in educating youth in a comprehensive manner about the need to apply wisdom and sound science to the choices they make, as those choices have far-reaching impacts on the world around them.

To date, National 4-H Council has distributed over 7,000 copies of the curriculum to more than 1,000 organizations in all fifty states, and at conferences including the National Association of Extension 4-H Agents conference in November 2000.

Since 1999, National 4-H Council has presented and showcased Going Places, Making Choices at over twenty workshops and conferences, reaching over 10,000 educators and conference attendees. It is estimated that tens of thousands of students throughout the United States and internationally have been introduced to the curriculum.

Contact Person:
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Georgia

4-H Environmental Green Team

Situation:
The decline of wetland areas, pollution of lakes and streams, excessive litter, loss of nesting sites for wood ducks, new construction that eliminated trees, and concern about the quantity and quality of water were environmental issues that caused 4-H youth in rural Crisp County to find solutions to make a difference. The 4-H Environmental Green Team tackled all of these problems and made a positive difference.

Program Description:
The Crisp County 4-H Environmental Green Team has twenty-eight Junior and Senior 4-H members who work closely with Keep Crisp Beautiful. Team members plan and participate in projects on a monthly basis that improve the environment and the quality of life for residents in the rural South Georgia county.

Accomplishments and Impacts:
4-H Environmental Green Team members have cleaned the shores of Lake Blackshear, obtained grants and collected change to raise money to plant trees at the new county recreation department, planted annuals at the courthouse, researched and presented talks on water conservation, wetlands, and keeping our drinking water clean. 4-H'ers also collaborated with the Department of Natural Resources to build and install wood duck nesting boxes in local wetlands. Over 600 youth ages ten to eighteen were taught about the importance of wetlands to the environment. Environmental Green Team members also taught youth living in public housing during the Environmental Day Camp. The camp included lessons on shopping to reduce waste, water conservation, litter control and concern for the environment.

4-H Green Team Members shared their environmental successes monthly on WSST Channel 55. They were also featured on the front page of the Cordele Dispatch three times, and in the community interest pages ten times.

Resource Commitment and Collaborators:
4-H'ers raised money for planting trees by collecting change from over 300 young people. One member collaborated with five community agencies to write and obtain a National Tree Planting Grant of $1,000. Keep Crisp Beautiful and the Department of Natural Resources donated literature and materials. Five community civic clubs assisted 4-H'ers. The program was conducted with limited resources, but tremendous volunteer and community support.

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Other Base Program Areas This Program Applies To:
Natural Resources Environmental Management
Leadership and Volunteer Development

Idaho

4H Natural Resource Workshop For Students and Teachers

Situation:
Although the state of Idaho's population is only 1.2 million, it's people depend heavily on it's abundant natural resources. Idaho's 6 major industries: #1 Manufacturing, #2 Agriculture, #3 Tourism, #4 Food Processing, #5 Timber, #6 Mining each depend on the state's water, forest, rangeland, wildlife, and soil resources. Idaho's people need to learn about these important natural resources, and they need to understand the issues related to competing uses of our natural resources, the trade-offs in environmental management, and their responsibilities as citizens.

Program Description:
The University of Idaho Cooperative Extension System and the Idaho Association of Soil Conservation Districts sponsor a natural resource workshop near beautiful Sun Valley for 12-14 year olds and for teachers. The workshop is a week-long, hands-on experience where students and teachers learn basic concepts and management issues related to Idaho's Soil, Water, Wildlife, Range, and Forest resources. Instructors are professionals in their related natural resource field from the University of Idaho Cooperative Extension System, the Natural Resource Conservation Service, the Idaho Department of Lands, and the United States Fish and Wildlife Service. In addition to outdoor lectures and hands-on labs, students and teachers apply their new natural resource knowledge in activities such as: 1) the Lewis and Clark Expedition, where teams hike a nature path and answer natural resource questions related to the survival of early explorers; 2) the Natural Resource Bowl, where teams compete against each other in a game-show format showcasing natural resource trivia; 3) the Big Wood Land Use Simulation Game, where teams represent various land-use industries and present a land-use proposal to a county land-use board in a public hearing format.

Students and teachers also enjoy outdoor activities such as hiking, rappeling, fishing, volleyball, firearm safety, target shooting. Night activities include special guests from the local area and fireside sing-alongs.

Stakeholder Satisfaction:
One of the major stakeholders is the local Soil Conservation Districts that provide camp

scholarships to a majority of the participants. With the continued support of these stakeholders since the workshops inception in 1960, their satisfaction with the workshop remains strong.

Accomplishments and Impacts:
The 2001 Central Idaho Natural Resource Workshop included 71 students. Fifty-nine students were sponsored with scholarships from 22 local Soil Conservation District and University of Idaho Cooperative Extension offices.

Students were tested on their knowledge of the 5 natural resource subjects upon arrival at the workshop, then again at the end of the workshop. Test results show a significant increase in natural resource knowledge gained after attending the workshop. The pre-test mean was 44 percent correct responses with a standard deviation of 14. Posttest mean was 85 percent with a standard deviation of 12.

Sixteen students returned from the 2000 Natural Resource Workshop to be cabin leaders. Each were subjected to a new leadership training program and evaluated on their leadership abilities. Although the evaluation did not show significant improvement in leadership skills, the students all commented on their improved leadership abilities.

Resource Commitment:
The per camper cost to attend the workshop is $145.00. Fifty-nine of the campers were on a full or partial scholarship from their local Soil Conservation district or County Extension Program. Major contributors to the success of the workshop include: University of Idaho 4-H Endowment Board ($1,500), University of Idaho Cooperative Extension ($1,925), and camper scholarships from Soil Conservation Districts and County Extension Programs ($3,500).

A total of 16 Natural Resource Conservation and Extension personnel attend and conduct the workshop with added input from various resource people.

Collaborators:
The success of the project is largely due to the undying commitment of our faculty and the support of the Idaho Association of Soil Conservation Districts (ASCOT) through camper scholarships and efforts of the local Soil Conservation Districts in recruiting students with the scholarships. The Idaho 4-H Endowment Board provided for funding support. Thanks to the Idaho Council on Industry and the Environment provided instruction of Industry and Environment and facilitation of the Big Wood Land Use Simulation Game. Steve Lines, Valley County Extension Educator, designed the cabin leader leadership program.

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Other base program areas this program applies to:
Natural Resource Environmental Management
Leadership & Volunteer Development

Illinois

Jr. Environmentalist Camp

Situation:
Many youth in suburban Cook County have little to stimulate their minds nor activities to fill their summer hours. In many of our limited income communities there are no structured summer educational programs other than summer school for children who had low-test scores.

Program Description:
During the summer of 2001, five Jr. Environmental half-day camps were scheduled for Monday through Thursday. The camps were conducted in four communities in the North and South Suburbs of Cook County. Three of the camps were held in low-income communities in the South suburbs whose population is nearly 100 percent African American. One of the North Suburban locations was a community that has a diverse population including African Americans, Latinos, Asians, Pacific Islanders, Eskimos and Caucasian and the other was in a community that is primarily Caucasian with all the participants being home schooled. One hundred eight youth participated. They were between the ages of eight and twelve. The South sites involved youth in the CED (Community and Economic Development Association) summer feeding program.

Many youth in the area know very little about insects. They lacked knowledge of what insects are beneficial to the environment. The objectives of the program were: 1) To create an awareness of insects as a crucial part of our environment; 2) To observe insects on plants; 3) To learn the benefits of insects to humans; 4) To identify beneficial and not so beneficial insects; and 5) To learn how to attract and control insects.

Stakeholder Satisfaction:
One Youth Development Educator and one Integrated Pest Management Educator conducted three-hour training sessions four-day per week for five weeks. Each day a different insect was studied. The insects of the day were: Day 1 – Ladybird Beetle, Day 2 - honeybee, Day 3 – Wasps and Solitary Bees, and Day 4 – Butterflies and Moths.

At three of the sites we had volunteers who assisted us that were from the CED program.

The day included discussions of what is an insect, presentation of the topic of the day, insect collection and identification, pre test and post tests on which ones are insects, quizzes and fill in the blanks after presentations, word searches, crossword puzzles, and riddles. All of the activities were age appropriate and included the experiential learning model.

Each day the campers did a project related to the day's topic. Day 1 they built a Ladybird Beetle House. We found the only youth that had problems building the houses were the youth from public housing. None of them had used a hammer before the camp. Day 2 they used beeswax foundation to make candles. Day three they made Solitary Bee Nests using drinking straws. Day 4 then made paper butterflies applying the knowledge that they learned about butterfly and moth markings and coloration.

The daily snack related to the days included: Ladybird Beetle Cupcakes, Orange Banana Sorbet and honey lemonade, yellow and black popcorn and dirt cake with gummy worms.

Feedback from the parents and agencies with whom we worked were overwhelmingly positive.

Accomplishments and Impacts:
Drawings of a centipede, millipede, sow bug, crab, scorpion, cockroach, lobster, tick, louse, spider, honey bee, daddy long legs, fly and beetle were included. Five of the pictures were insects. The results are included on the table below.

Insect	Pre Test	Post Test
Cockroach	89%	92%
Louse	80%	97%
Honey Bee	79%	81%
Fly	88%	98%
Beetle	82%	93%

When given a word description of the larva and/or nymph stage of six insects the campers were asked to identify the correct adult picture for each description. Correct identification of the firefly and grasshopper was 100%, the tiger beetle was 98%, the horse fly was 90 % and the sphinx moth and mayfly was 89%.

When asked to complete the following fill in the blanks statements the results are as follows: The worker bees build their comb out of beeswax (96%). Every comb (80%) contains thousands of cells. The queen (98%) lays an egg in each cell. These eggs turn into a new queen (92%), drone (93%) and worker (91%). The worker bees use these cells to store their food honey (86%) and pollen (88%). Beekeepers keep their bees in wooden hives (75%) in order to move them around. Each hive contains several frames (70%) in which the bees build their combs.

Resource Commitments:
No external resources were generated.

Collaborators:
Denise Legvold, South Suburban Unit Leader; Yvonne Brown, North Suburban Unit Leader; Maureen Statland, Unit Educator – Youth Development; Community Economic Development Association at St. John's Church, Robbins; Ford Heights CED; SE CED Robbins; East Prairie School, Skokie; and Riverside Presbyterian Church, Riverside.

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Indiana

Project Wet (Water Education for Teachers)

Situation:
Teachers have expressed a need for training in water related curriculum in order to teach water education to their students. The need for this knowledge has increased in the past two years as the White River experienced a fish kill and drinking water quality has become a prominent issue in the community.

The goal of Project WET (Water Education for Teachers) is to facilitate and promote awareness, appreciation, knowledge and stewardship of water resources through the development and dissemination of classroom-ready teaching aids. The Project WET program includes a K-12 curriculum guide that uses an interdisciplinary approach for education.

Program Description:
Three Project WET (Water Education for Teachers) training sessions were conducted in Marion County from October 2000 – July 2001 by Extension Educator Nancy Scott, a certified Project WET facilitator. A total of 49 Marion County teachers and pre-service educators were trained in the three sessions. Two of the sessions were conducted at public schools and the third session conducted at IUPUI.

Each Project WET training session includes six hours of instructional time on activities within the Project WET curriculum guide, a discussion of current events involving water topics, and hands-on practice with WET activities.

Stakeholder Satisfaction:
Teachers have expressed a need for training in water related curriculum in order to teach water education to their students.

Accomplishments and Impacts:
Participants in the Project WET (Water Education for Teacher) training sessions have (1) learned about the water cycle, what they can do to conserve water, and improve water quality; and (2) learned how to incorporate Project WET activities into their classroom curriculum.

Evaluation comments from participants include: "I am very excited about using this in my classroom. I love how the book is put together so that I can easily incorporate it with other subjects."

Additionally, the participants have been introduced to Purdue Extension Marion County and have learned that Extension and Nancy Scott are resources for them to use within their own community.

Resource Commitment:
County Appropriation from Marion County Government, Registration fees paid by participants

Collaborators:
Susan Schultz, Indiana Project WET Coordinator, Purdue Agronomy & IDNR Soil Conservation

Contact Person:
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Other base program areas this program applies to:
Natural Resources Environmental Management

Maryland

Natural Resources…Kid Style!!!

Situation:
At the heart of Maryland's Eastern Shore lies Talbot County. With 618 miles of waterfront, Talbot County is believed to have the longest shoreline of any county in the continental United States. The seafood industry is second only to agriculture as the county's economic base. Thus, natural resources management is a priority. Young people need to make connections to their local watershed and the environmental issues being faced.

Program Description:
The primary goal of Natural Resources…Kid Style!!! was to educate youth outside of a classroom setting about the environment. This program uses the experiential learning model, therefore underlying goals for youth were to develop life skills including critical thinking, communication, teamwork, concern for others, accepting differences and responsible citizenship.

The program also exposed youth to 4-H programs and gave them the opportunity to learn more about becoming involved in 4-H.

The target audience included children of various socio-economic backgrounds enrolled in Talbot County Parks and Recreation and YMCA summer camps. The children ranged in age from 4 to 14 years old.

On a weekly basis over the course of 10 weeks, a 4-H Extension Educator and/or Program Assistant would visit the camps and present an environmental topic. Most of the lessons and activities were from the Project Learning Tree and Project WET curricula, with some lessons developed locally. In addition to the information presented, children were given access to 4-H program information and resources related to the day's topic.

Stakeholder Satisfaction:
Over the 10 weeks that the Natural Resources…Kid Style!!! program was offered, 688 children were involved. Due to the nature of the camps, some children came every week while others were only enrolled for two weeks sessions. The children were broken out into six groups, with each group spending thirty minutes with the 4-H staff. Camp counselors were present at all times to assist when needed. The total commitment involved in planning and teaching the program for the summer camps is as follows: .5 annual faculty FTEs and .15 camp counselor FTEs.

Natural Resources…Kid Style!!! is a very adaptable program. The youth involved in the program ranged anywhere from 4 to 14 years of age, yet they worked side by side to learn the same concept at different levels. Another important characteristic of this program was that the children learned by doing instead of being in the traditional teacher-student role, as in a classroom/lecture situation. A youth driven discussion of the previous week's topic started the session, followed by a brief introduction of the current day's topic and instructions for the learning activity. The program was very active, allowing facilitator to focus the attention of the participants on the task at hand. Once the learning activity was completed, the youth regrouped to discuss what they had gleaned from the learning activity and to relate their findings to real-world experiences. Natural Resources…Kid Style!!! is a true model of experiential learning.

Stakeholder satisfaction was measured by the active participation of the youth in the program week after week. The administrators and staff of both camps felt that the inclusion of Natural Resources…Kid Style!!! added a more educational aspect to their program that they had not had in the past. Parents provided positive feedback based on the enthusiastic remarks of their children, as well as the finished products that they created.

Accomplishments and Impacts:
On a weekly basis, the 4-H Extension Educator, 4-H Program Assistant, and camp administrators evaluated the program. Discussion included what went well, what could have been done differently, and how parents and children felt about the program. There were several major observations made after the second week:

1. Camp counselors had less disciplinary issues when their group was involved in Natural Resources…Kid Style!!!
2. Youth came to the program with enthusiasm to participate in "4-H" because it was fun.
3. Youth that refused to work with others early on put aside their differences to work as a team.
4. Participants returned from the following week's session with questions, which indicated that they processed the information given.
5. By the end of the program, the children that were initially withdrawn and quiet, were actively involved in discussions, asking questions, and able to speak in front of the group.

Resource Commitment:
The Talbot County 4-H Program received The Be A Good Neighbor Environmental Grant for a total of $500 from the local Wal-Mart. This money was invested in materials to set up learning kits specific to each activity. The money will allow the kits to be maintained for future use in 4-H programs, camps and in-school programs.

Collaborators:
Talbot County YMCA – Summer Camp Program; Talbot County Department of Parks and Recreation; Keith Lockwood, Department of Natural Resources' Cooperative Oxford Laboratory

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Other Base Program Areas This Program Applies To:
Natural Resources Environmental Management, Agriculture

Oregon

Environmental Stewardship

Situation:
Oregonians face many critical environmental issues in agriculture, forestry, energy and marine resources. In attempting to address these pressing environmental concerns Oregonians quickly discover two underlying difficulties which hamper issue resolution. First, factual, unbiased information is hard to find, analyze and understand. Second, public policy processes are not positive experience for citizens who wish to be involved.

At the beginning of the 1997-2000 Plan of Work the Environmental Stewardship Team realized

that global, national and regional trends underscored the timeliness of, and need for, environmental stewardship action. In Oregon's 4-H program, there were only 4,966 youth enrolled in the natural science project areas in the 1995-96 year. The opportunity for improvement was unlimited.

Program Description:
The Environmental Stewardship Team believed that the 4-H youth program had staff and resources that could be used in a united effort to address many of the issues identified. Extension staff would provide informal educational opportunities, where youth and adults would increase their appreciation for, and their knowledge of our natural world, leading to educated choices in the stewardship of natural resources.

The Environmental Stewardship Team and the 4-H Natural Science Curriculum Development Committee are comprised of 4-H volunteer leaders, county Extension staff and program assistants from across Oregon. Nineteen of Oregon's 36 counties have some type of Environmental Stewardship support plan. The demographics in these counties represents Oregon's population as a whole.

At the State level the need for new and updated publications was identified. Publications adopted included Give Water A Hand, 4-H Watershed Project- Ridges to Rivers, 4-H Discovery Learning Outdoors, Em*Power, National 4-H Sportfishing program, and the CCS Entomology Series. Oregon specific publications written to support program delivery included 4-H Wetland Wonders Water Quality Program, Our Water World 4-H Marine Science Project, 4-H Earth Science Leaders Guide and Of People and Fish, A 4-H Natural Science and Cultural Discovery Program.

The addition of new publications necessitated training workshops in counties to build Extension staff capacity to support the materials and facilitate dissemination to volunteers and school teachers. Over a five year period 45 workshops reached 850 participants.

Specialized equipment was needed for successful delivery of some of the new curricula to youth. Kits of materials and supplies were developed for some curricula and guidelines for purchase were provided for others. Also "loaner kits", which are used by multiple counties , facilitate program delivery.

In 1998, recognizing that the Oregon Education Reform Act provided a new opportunity to work with schools, the 4-H Youth Development Department released a paper on School Enrichment Delivery Mode for 4-H Projects. While agents were at first reluctant to explore this method of delivery, a steady increase in enrollments has shown that the new materials and kits designed specifically to support Oregon Department of Education Benchmarks had found a ready market.

Stakeholder Satisfaction:
The methods and resources used to deliver the Environmental Stewardship program has grown and evolved over the past five years. There were 18 agents who wrote plans of work to the first

year of the plan. They planned an average of 21 days per person or a total of 1.78 FTE. Methods of delivery were limited to camps, educational tours and some traditional club support.

In the 2000 year there were 19 agents working on the plan. Due to changes in staffing, only 9 of these were in the original plan of work group. An average of 31 days per person or a total of 2.87 FTE was planned to Environmental Stewardship. Methods of delivery now include school enrichment, outdoor schools, leader training workshops, partnerships and club enrichment programming. The increase in the number of planned days and variety of delivery modes is an indication that this plan has gained importance among Extension faculty and their stakeholders.

Accomplishments and Impacts:
The combination of new publications, workshops and materials kits has increased county staff capacity to deliver 4-H Natural Science programs. There are ten projects, five of them new, that support educational programs. These include entomology, outdoors, forestry, marine science, outdoor discovery, sportfishing, water resources, EM*Power, wildlife stewards and shooting sports. State youth enrollments which totaled only 4,966 in 1995-96, have reached 33,297 in 1999-00.

Resource Commitment:

Oregon 4-H Foundation	$ 4,150
Extension Administration	$ 30,000
Water Quality Initiative	$ 7,730
EPA	$ 5,000
Anonymous Donor	$ 5,000
Gannett Foundation	$ 2,000
Total	$ 53,880

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Pennsylvania

Children's Ground Water Festival

Situation:
Today's children will be the caretakers of our environment in the future. Understanding that resources may be limited and that what we do to impact our environment today may impact it for years and generations to come are important concepts for youth to develop.

Program Description:

Annually about 1000 youth from sixth grades in nine elementary schools in Washington County, Pennsylvania participates in the Children's Groundwater Festival held the past six years. The program draws youth from both rural and urban areas and includes minority populations within the county. The program includes educational workshops on such topics as water pollution, ground water use, wetlands, groundwater contamination, composting, and watersheds. Penn State Cooperative Extension presents a workshop using the Meet the Plants 4-H curriculum. A total of about 25 workshops are offered throughout the day in addition to educational exhibits for students to visit. One exhibit included a live calf display showing the amount of water a cow drinks each day.

Stakeholder Satisfaction:
County Commissioners regard this program as an important educational opportunity and attend to speak to the youth each year.

Accomplishments/Impacts:
Evaluations are completed by program participants on the entire program and also on the Meet the Plants workshop run by Cooperative Extension. In this workshop youth gained knowledge on the following: the parts of a mushroom, that moss is found in forests and shady places, roots carry water and minerals from the soil to the stem, the average number of gallons of water it takes to wash your dishes with a dishwasher is 11 gallons, it takes about six gallons of water to flush a toilet, and the average number of gallons of water coming out of a kitchen or bathroom faucet each minute is four gallons.

Resource Commitment:
California University of Pennsylvania provides free facility use. In the past, funding has been obtained through rural development grants and for new program support through Cooperative Extension. T-shirts and bottled water are provided to each participant through support from the Pennsylvania American Water Company. Allegheny Energy also provides resources for program support.

Collaborators:
Groups providing educational and resource support include Penn State Cooperative Extension, the Conservation District, Washington County Parks and Recreation Department, the Fish and Boat Commission, the Game Commission, the Bureau of Forestry, and the Department of Environmental Protection.

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